

**Notice of Allowability**

Application No.

10/085,753

Examiner

Michael Komakov

Applicant(s)

TSUGA ET AL.

Art Unit

1746

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--**

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 12/20/2004.
2. ☒ The allowed claim(s) is/are 1-3, 5, 8 and 10-14.
3. ☒ The drawings filed on 28 February 2002 are accepted by the Examiner.
4. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☐ All b) ☐ Some\* c) ☒ None of the:
    1. ☒ Certified copies of the priority documents have been received.
    2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
  6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
    - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
      - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
    - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date \_\_\_\_\_
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date \_\_\_\_\_
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other \_\_\_\_\_

### **EXAMINER'S AMENDMENT**

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Mr. J. Hack, esq., on 01/21/2005.

The application has been amended as follows:

In claim 1 after the words "A method for removing particles on semiconductor wafers" insert ---wherein the semiconductor wafers are bare wafers or wafers having a silicon oxide film---

In claim 10 after the words "A method for removing particles on a semiconductor wafer" insert ---wherein the semiconductor wafer is a bare wafer or a wafer having a silicon oxide film---

### **Response to Applicants' Amendment**

2. All previous rejections have been overcome by Applicants' amendment, filed 12/20/2004 and the rejections are withdrawn. The introduction of new claims 10-14 and the cancellation of claims 4,6,7,9 are acknowledged.

### **Allowable Claims**

3. Claims 1-3, 5, 8, 10-14 are allowable over the prior art of record.

### Reasons for Allowance

4. The following is an examiner's statement of reasons for allowance: The closest prior art of record are Matsuno et al (U.S. 2001/0009155) and Ohmi (U.S. 5,954,885).

Based on the recitation in preambles of the instant claims 1 and 10 it is understood that the instantly recited method of removing particles on semiconductor wafer(s) is limited to cleaning of bare silicon wafer surfaces or wafer surfaces covered with silicon oxide film.

The reference to Matsuno et al remains the closest prior art of record. While teaching the semiconductor cleaning process with the steps almost similar to those instantly claimed, Matsuno et al indicate that their cleaning process is utilized for cleaning off, **subsequent to formation** of a fine arrangement of electrical component parts or a circuit on the substrates, foreign matter...remaining on the substrates and/or adhered during or after the formation of the pattern. Therefore, the step of forming an oxide layer of certain thickness on a surface of a semiconductor substrate by immersing it into ozone/water cleaning solution for a prescribed time in combination with the other processing steps, wherein the substrate is either a bare silicon wafer or a wafer covered with silicon oxide film, is not anticipated or suggested fairly by Matsuno et al.

The reference to Ohmi (U.S. 5,954,885) teaches semiconductor substrate cleaning method, which includes the step of immersing the substrate into ozone water bath for 3 minutes, wherein the concentration of ozone is provided in a range from 2 to 10 ppm, thus mildly oxidizing the substrate surface. Ohmi fails to anticipate or suggest fairly the step of treating the substrate with hydrogen water, as instantly claimed.

Upon further search no other prior art that anticipates or suggests fairly the cleaning of bare wafers or wafers covered with silicon oxide film with the combination of processing steps as instantly recited has been located as of the date of this office action. Therefore, claims 1-3, 5, 8, 10-14 are allowed over the prior art of record.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Kornakov whose telephone number is (571) 272-1303. The examiner can normally be reached on 9:00am - 5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Barr can be reached on (571) 272-1414. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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01/19/2005